



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

65565

7590

10/04/2010

SUGHRUE-265550
2100 PENNSYLVANIA AVE. NW
WASHINGTON, DC 20037-3213

EXAMINER

GOON, SCARLETT Y

ART UNIT

PAPER NUMBER

1623

DATE MAILED: 10/04/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,417	04/10/2007	Kenji Miyamoto	Q95907	4711

TITLE OF INVENTION: HYALURONIC ACID DERIVATIVE AND DRUG CONTAINING THE SAME

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/04/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

65565 7590 10/04/2010
SUGHRUE-265550
2100 PENNSYLVANIA AVE. NW
WASHINGTON, DC 20037-3213

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,417	04/10/2007	Kenji Miyamoto	Q95907	4711

TITLE OF INVENTION: HYALURONIC ACID DERIVATIVE AND DRUG CONTAINING THE SAME

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/04/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
GOON, SCARLETT Y	1623	514-054000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____
Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.**

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,417	04/10/2007	Kenji Miyamoto	Q95907	4711
65565	7590	10/04/2010	EXAMINER	
SUGHRUE-265550			GOON, SCARLETT Y	
2100 PENNSYLVANIA AVE. NW			ART UNIT	PAPER NUMBER
WASHINGTON, DC 20037-3213			1623	

DATE MAILED: 10/04/2010

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability**Application No.**

10/585,417

Applicant(s)

MIYAMOTO ET AL.

Examiner

SCARLETT GOON

Art Unit

1623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 25 August 2010.
2. ☒ The allowed claim(s) is/are 36-57.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 13 May 2010
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

/SCARLETT GOON/
Examiner, Art Unit 1623

/Shaojia Anna Jiang/
Supervisory Patent Examiner, Art Unit 1623

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to Applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

On 22 September 2010, a proposed amendment in condition for allowance was discussed with Ms. Yan Lan, Applicants' attorney, in a telephone interview. Authorization for this examiner's amendment was given in a telephone interview with Ms. Yan Lan on 24 September 2010.

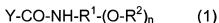
The application has been amended as follows:

- Claims 36, 38-40, 42, 44, 45, 47, 49-54 and 56 have been amended, as listed below.
- Claims 34 and 35 have been cancelled, as listed below.
- Note: For those claims that are neither amended nor canceled as indicated in this Examiner's Amendment, see the amendment filed on 25 August 2010.

34. (Canceled).

35. (Canceled).

36. (Currently Amended): A hyaluronic acid compound in which a non-steroidal anti-inflammatory drug is bound to hyaluronic acid through a covalent bond, ~~which has~~ wherein a partial structure of a hyaluronic acid disaccharide unit into which the anti-inflammatory drug is introduced[,] is represented by the following formula (1):



wherein Y-CO- represents the glucuronic acid ~~one~~ residue of the hyaluronic acid disaccharide unit;

R² represents a hydrogen atom or a non-steroidal anti-inflammatory drug residue, ~~represented by Z-CO-, wherein~~ and at least one R² is a nonsteroidal anti-inflammatory drug residue;

~~-HN-R¹-(O-)_n-NH-R¹-(O-)_n~~ represents a spacer residue in a spacer compound represented by H₂N-R¹-(OH)_n having n numbers of a hydroxyl group;

R¹ represents a linear or branched hydrocarbon group having from 2 to 12 carbon atoms which may have a substituent;

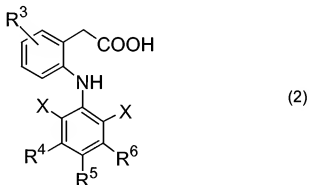
-CO-NH- represents an amide bond of a carboxyl group in the glucuronic acid as a constituting saccharide of the hyaluronic acid with an amino group in the spacer compound;

wherein a hydroxyl group in the spacer compound forms an ester bond with a carboxyl group in the non-steroidal anti-inflammatory drug residue; and

n is an integer of from 1 to 3,

wherein the hyaluronic acid compound has a degree of substitution of the non-steroidal anti-inflammatory drug of from 5 to 50 mol% per repeating disaccharide unit of hyaluronic acid, and the carbonyl group in a hyaluronic acid residue constituting the hyaluronic acid compound is present as an amide bond participating in the binding with the spacer-binding anti-inflammatory drug residue or as a free carboxyl group not participating therein, according to the degree of substitution of the non-steroidal anti-inflammatory drug residue.

38. (Currently Amended): The hyaluronic acid compound according to claim 36, wherein the non-steroidal anti-inflammatory drug is a compound represented by the following formula (2):



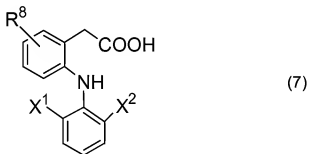
wherein,

R^3 represents a substituent selected from the group consisting of a lower alkyl group, a lower alkoxy group, ~~or~~ and a hydrogen atom;

R^4 , R^5 and R^6 each independently represents a substituent selected from a the group consisting of a lower alkyl group, a lower alkoxy group, a hydroxyl group, a halogen atom, ~~or~~ and a hydrogen atom; and

each X is ~~X's are~~ the same or different and each represents a substituent selected from the group consisting of a lower alkyl group, a trifluoromethyl group, ~~or~~ and a halogen atom, ~~and~~ wherein at least one of ~~X's~~ X is a halogen atom.

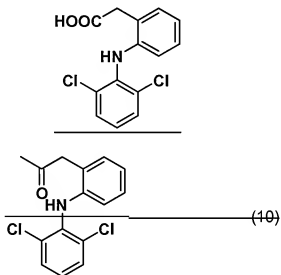
39. (Currently amended): The hyaluronic acid compound according to claim 38, wherein the non-steroidal anti-inflammatory drug is a compound represented by the following formula (7):



wherein R^8 represents a substituent selected from the group consisting of a lower alkyl group, ~~and~~ a lower alkoxy group, ~~or~~ and a hydrogen atom; and

X^1 and X^2 each independently represents a substituent selected from the group consisting of a lower alkyl group, ~~and~~ a trifluoromethyl group, and ~~or~~ a halogen atom, wherein at least one of X^1 and X^2 is a halogen atom.

40. (Currently Amended): The hyaluronic acid compound according to claim 36, wherein the non-steroidal anti-inflammatory drug residue represented by ~~Z-CO-~~ is a residue represented by the following formula (10):



42. (Currently Amended): The hyaluronic acid compound according to claim 36, wherein R^1 in formula (1) is selected from the group consisting of an ethylene group, a trimethylene group, ~~or~~ and a propylene group, which may have one or more substituents.

44. (Currently Amended): The hyaluronic acid compound according to claim 36, wherein a solution obtained by dissolving the hyaluronic acid compound in an aqueous medium to a concentration of 1.0% by weight is capable of passing through a

porous filter having a pore size of 0.45 μm and a diameter of 25 mm, at a ratio of 2 mL per minute or more at a temperature of 24°C under a pressure of 5.0 kg/cm².

45. (Currently Amended): The hyaluronic acid compound according to claim 36, wherein a solution obtained by dissolving the hyaluronic acid compound in an aqueous medium to a concentration of 1.0% by weight is capable of passing through a porous filter having a pore size of 0.22 μm and a diameter of 25 mm, at a ratio of 2 mL per minute or more at a temperature of 24°C under a pressure of 5.0 kg/cm².

47. (Currently Amended): The hyaluronic acid compound solution according to claim 46, wherein the aqueous medium is an aqueous medium selected from the group consisting of phosphate buffered saline, saline and water for injection.

49. (Currently Amended): A pharmaceutical composition ~~agent~~ which comprises the hyaluronic acid compound according to claim 36 as an active ingredient and a pharmaceutically acceptable carrier.

50. (Currently Amended): The pharmaceutical composition ~~agent~~ according to claim 49, which is an arthritis treating agent, an anti-inflammatory medicament or an analgesic.

51. (Currently Amended): The pharmaceutical composition agent according to claim 49, which is useful for parenteral administration.

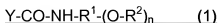
52. (Currently Amended): The pharmaceutical composition agent according to claim 51, which is an injection useful for topical administration.

53. (Currently Amended): The pharmaceutical composition agent according to claim 51, which is an injection useful for intra-articular administration.

54. (Currently Amended): A pharmaceutical composition agent which is capable of being pushed out from an injector and which comprises a solution in which the hyaluronic acid compound according to claim 36, as an active ingredient, is dissolved in an aqueous medium.

56. (Currently Amended): The kit according to claim 55, wherein the filled solution is the a pharmaceutical composition agent according to claim 49 which comprises a hyaluronic acid compound as an active ingredient and a pharmaceutically acceptable carrier.

wherein the hyaluronic acid compound is a hyaluronic acid compound in which a non-steroidal anti-inflammatory drug is bound to hyaluronic acid through a covalent bond, wherein a partial structure of a hyaluronic acid disaccharide unit into which the anti-inflammatory drug is introduced is represented by the following formula (1):



wherein Y-CO- represents the glucuronic acid residue of the hyaluronic acid disaccharide unit;

R² represents a hydrogen atom or a non-steroidal anti-inflammatory drug residue, and at least one R² is a nonsteroidal anti-inflammatory drug residue;

-NH-R¹-(O-)_n represents a spacer residue in a spacer compound represented by H₂N-R¹-(OH)_n having n numbers of a hydroxyl group;

R¹ represents a linear or branched hydrocarbon group having from 2 to 12 carbon atoms which may have a substituent;

-CO-NH- represents an amide bond of a carboxyl group in glucuronic acid as a constituting saccharide of the hyaluronic acid with an amino group in the spacer compound;

wherein a hydroxyl group in the spacer compound forms an ester bond with a carboxyl group in the non-steroidal anti-inflammatory drug residue; and

n is an integer of from 1 to 3,

wherein the hyaluronic acid compound has a degree of substitution of the non-steroidal anti-inflammatory drug of from 5 to 50 mol% per repeating disaccharide unit of hyaluronic acid, and the carbonyl group in a hyaluronic acid residue constituting the hyaluronic acid compound is present as an amide bond participating in the binding with the spacer-binding anti-inflammatory drug residue or as a free carboxyl group not participating therein, according to the degree of substitution of the non-steroidal anti-inflammatory drug residue.

Information Disclosure Statement

The information disclosure statement (IDS) dated 13 May 2010 complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609. Accordingly, it has been placed in the application file and the information therein has been considered as to the merits.

DETAILED ACTION

Applicants' Amendment and Remarks filed on 25 August 2010, in which claims 1-33 were previously cancelled, and claim 36 has been amended to change the scope and breadth of the claims, is acknowledged.

The Declaration of Mr. Kenji Myamoto, Mr. Yousuke Yasuda and Mr. Keiji Yoshioka (inventors), submitted by Applicants on 25 August 2010 under 37 CFR § 1.132, is acknowledged and will be further discussed below.

Claims 36-57 are pending in the instant application.

The elected species of Formula (2), diclofenac, wherein R³, R⁴ and R⁵ each represent a hydrogen atom and X represents a chlorine atom, as the single disclosed species for a non-steroidal anti-inflammatory drug, has been carefully reviewed and is seen to be allowable. In view of the allowability of the elected species for a non-steroidal anti-inflammatory drug, the requirement for a species election as set forth in the Office Action mailed 26 November 2008, insofar as it still pertains to the pending claims, is hereby withdrawn. The search has been extended to include the full scope of

the claimed hyaluronic acid compound as set forth in independent claim 36. The full scope of the instant pending claims is found to be allowable.

The Examiner's amendment is fully supported by the original Specification. Support for the amendments can be found, for example, in the originally filed claims. Hence, the instantly claimed compound and compositions are enabled and have sufficient written description in the Specification. The Examiner's amendment introduces no new matter.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: The instantly claimed compounds and compositions, as recited in the instant claims, are not seen to be taught or fairly suggested in the prior art, as discussed below.

Applicants' amendment and arguments, filed 25 August 2010, and the Examiner's amendment above, with respect to the rejection of claims 36-57 under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention, have been fully considered and are persuasive. The claims have been amended to clearly indicate that "at least one R² is a nonsteroidal anti-inflammatory drug residue." This rejection has been **withdrawn**.

Applicants' amendment and arguments, filed 25 August 2010, the Declaration of Mr. Kenji Miyamoto, Mr. Yousuke Yasuda and Mr. Keiji Yoshioka, submitted on 25 August 2008 under 37 CFR § 1.132, and the Examiner's amendment above, with respect to the rejection of claims 36-57 under 35 USC § 103(a), as being unpatentable over EP 1082963 A1 to Tamura *et al.*, in view of journal publication by Perioli *et al.*, have been fully considered and are persuasive. Applicants argue that one of ordinary skill in the art would not have been motivated to combine Perioli and Tamura in the manner suggested by the Examiner, and even if the references were somehow combined, the present invention exhibits unexpectedly superior properties as compared to conjugates linked either by a diamide group or a diester group. Applicants have submitted a Declaration under 37 C.F.R. § 1.132 to argue that the instantly claimed invention exhibits unexpected and surprising properties by using a specific combination of the two types of bonding in a compound comprising NSAIDs, hyaluronic acid and a spacer. The Declaration shows that the analgesic effect of the compound of the present invention exhibited unexpectedly superior properties, i.e., consistent and continued improvement in analgesic effect, lower pain score and higher weight loading rate, as compared to the properties exhibited by the C2 diester and C2 diamide compounds. Therefore, because of the unexpectedly superior results in its analgesic effect, Applicants argue that the instantly claimed invention is non-obvious over the combined teachings of the prior art.

Applicants' arguments and the Declaration of Mr. Miyamoto, Mr. Yasuda and Mr. Yoshioka under 37 C.F.R. § 1.132, have been carefully reviewed. One of ordinary skill

in the art would have been motivated to make the substitution of linkers as discussed in the Office Action dated 25 February 2010 with the expectation that the linker substitution would yield similar results. However, in view of the Declaration submitted by Applicants, the claimed compounds are seen to exhibit unexpected properties over the combined teachings of the prior art. Therefore, Applicants' arguments of unexpected results are persuasive. The Examiner further queried Applicants as to whether similar unexpected properties would be expected if the chain length of the linker was varied from 2-12 carbon units, as instantly claimed. Applicants indicated that since the linker was cleavable, it should have no bearing on the activity, and thus, one of ordinary skill in the art would expect similar unexpected properties with a longer chain length. Furthermore, due to the similarity in function of different non-steroidal anti-inflammatory drugs, one of ordinary skill in the art would expect different non-steroidal anti-inflammatory drugs to exhibit similar unexpected properties. Therefore, this rejection has been **withdrawn**.

Thus, the claimed hyaluronic acid compound and compositions comprising said hyaluronic acid compound, as recited in the instant claims, are seen to be novel and non-obvious over the teachings of the prior art.

Exemplary methods for the synthesis of hyaluronic acid compounds as recited in claim 36 are disclosed in the instant Specification. Additionally, exemplary methods for administration of the claimed compounds in various animal models are disclosed in the

instant Specification. Hence, the instantly claimed hyaluronic acid compounds and compositions, as recited in the instant claims, are enabled and have sufficient written description in the Specification.

Conclusion

Accordingly, the Examiner's Amendment above is sufficient to place the application in condition for allowance.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCARLETT GOON whose telephone number is 571-270-5241. The examiner can normally be reached on Mon - Thu 7:00 am - 4 pm and every other Fri 7:00 am - 12 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shaojia Anna Jiang/
Supervisory Patent Examiner, Art Unit 1623

/SCARLETT GOON/
Examiner
Art Unit 1623